



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,193	10/06/2005	Hiroaki Matsumiya	OKUDP0136US	8414
51921 7590 02/04/2008 MARK D. SARALINO (MEI) RENNER, OTTO, BOISSELLE & SKLAR, LLP 1621 EUCLID AVENUE 19TH FLOOR CLEVELAND, OH 44115			EXAMINER BATTAGLIA, MICHAEL V	
			ART UNIT 2627	PAPER NUMBER
			MAIL DATE 02/04/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/552,193	Applicant(s) MATSUMIYA ET AL.	
	Examiner Michael V. Battaglia	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figures 1-4 and 8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

4. Claims 1-5 are objected to because of the following informalities: On line 9 of claim 1 and line 8 of claim 5, replacing "the optical disk" with --an optical disk-- is suggested to avoid improper antecedent basis issues. Appropriate correction is required.

Invocation of 35 USC § 112, Sixth Paragraph

5. The following is a quotation of the sixth paragraph of 35 U.S.C. 112:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The following is a quotation of MPEP 2181(I):

A claim limitation will be presumed to invoke 35 U.S.C. 112, sixth paragraph, if it meets the following 3-prong analysis: (A) the claim limitations must use the phrase “means for” or “step for;” (B) the “means for” or “step for” must be modified by functional language; and (C) the phrase “means for” or “step for” must not be modified by sufficient structure, material, or acts for achieving the specified function.

The claimed “diffraction means,” “light receiving means” and “phase difference detection means” limitations of claims 1 and 5; the claimed “first calculation means,” “second calculation means” and “third calculation means” limitations of claim 3; and the claimed “signal amplitude calculation means,” “signal summation means” and “phase difference calculation means” limitations of claim 4 use the phrase “means for” modified by functional language and not modified by sufficient structure for achieving the specified function. Accordingly, the “means for” limitations of claims 1 and 3-5 are presumed to invoke 35 U.S.C. 112, sixth paragraph.

“If the specification defines what is meant by [a means-plus-function claim] limitation for the purposes of the claimed invention, the examiner should interpret the limitation as having that meaning” (MPEP 2182). The specification defines the claimed “diffraction means” of claims 1 and 5 as diffraction grating 202 (Page 2, lines 12-18; Page 18, line 18-age 19, line 14; and Page 29, lines 3-10). The specification defines the claimed “light receiving means” of claims 1 and 5 as photodetector 208 (Page 3, lines 2-5; Page 4, lines 6-15; Page 19, lines 9-14; and Page 29, lines 3-10). The specification defines the claimed “phase difference detection means” of **claim 5** as phase difference detection circuit 101 (Page 20, line 5-Page 21, line 11 and Page 29, line 11-Page 30, line 9). The specification defines the claimed “first calculation means” of claim 3 as MPP calculation circuit 304 (Page 5, lines 5-17; Page 4, lines 6-15; Page 19, lines 9-14; and Page

29, lines 3-10). The specification defines the claimed “second calculation means” of claim 3 as SPP calculation circuit 305 (Page 5, lines 5-18; Page 4, lines 6-15; Page 19, lines 9-14; and Page 29, lines 3-10). The specification defines the claimed “third calculation means” of claim 3 as DPP calculation circuit 306 (Page 5, lines 5-20; Page 4, lines 6-15; Page 19, lines 9-14; and Page 29, lines 3-10). The specification defines the claimed “signal amplitude calculation means” of claim 4 as signal amplitude calculation circuit 701 (Page 29, lines 15-20). The specification defines the claimed “signal summation means” of claim 4 as signal summation circuit 702 (Page 30, lines 1-4). The specification defines the claimed “phase difference calculation means” of claim 4 as phase difference calculation circuit 703 (Page 30, lines 4-9). Accordingly, those limitations have been interpreted as having the meanings identified above.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-4 and 6-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 6 claims that, “based on the phase difference [between a main push-pull signal MPP and a differential signal between the main push-pull signal MPP and a sub push-pull signal SPP], an offset is applied in a tracking control of the main beam with respect to the optical disk to compensate for an off-tracking caused by a phase shift of the differential signal.” Similarly,

claim 1 claims that, “in accordance with an output from the phase difference detection means [which is for detecting a phase difference between a main push-pull signal MPP and a differential signal between the main push-pull signal MPP and the sub push-pull signal SPP], an offset is applied in a tracking control of the main beam with respect to the optical disk to compensate for an off-tracking caused by a phase shift of the differential signal.”

While the specification enables one skilled in the art to apply an offset **based on a phase difference between a main push-pull signal MPP and a sub push-pull signal SPP** to compensate for an off-tracking caused by a phase shift of a differential signal (Page 20, line 5-Page 27, line 10 (specifically Page 21, line 12-Page 23, line 6 and Page 26, lines 5-14) and Page 29, line 11-Page 34, line 11 (specifically Page 33, line 10-Page 34, line 1)), one skilled in the art would require undue experimentation to apply an offset **based on the phase difference between a main push-signal MPP and the differential signal**, which is between the main push-pull signal MPP and a sub push-pull signal SPP, to compensate for an off-tracking caused by a phase shift of the differential signal and thus make and use the claimed invention. Accordingly, claims 1-4 and 6-8 fail to comply with the enablement requirement.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

“If one employs means plus function language in a claim, one must set forth in the specification an adequate disclosure showing what is meant by that language. If an applicant fails

to set forth an adequate disclosure, the applicant has in effect failed to particularly point out and distinctly claim the invention as required by the second paragraph of section 112” (MPEP 2181(II) quoting *In re Donaldson Co.*, 16 F.3d 1189, 1195, 29 USPQ2d 1845, 1850 (Fed. Cir. 1994) (en banc)). “[T]he corresponding structure . . . of a [means]-plus-function limitation must be disclosed in the specification itself in a way that one skilled in the art will understand what structure . . . will perform the recited function (MPEP 2181(II) citing *Atmel Corp. v. Information Storage Devices, Inc.*, 198 F.3d 1374, 1381, 53 USPQ2d 1225, 1230 (Fed. Cir. 1999)). “If there is no disclosure of structure, material or acts for performing the recited function, the claim fails to satisfy the requirements of 35 U.S.C. 112, second paragraph” (MPEP 2181(II) citing *Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1376, 58 USPQ2d 1801, 1806 (Fed. Cir. 2001); *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1115-18, 63 USPQ2d 1725, 1731-34 (Fed. Cir. 2002)).

In regard to the “phase difference detection means” limitation of claim 1, the specification does not disclose the corresponding structure in such a way that one of ordinary skill in the art will understand what structure will perform the recited function of “detecting a phase difference between the main push-pull signal MPP and the differential signal [which is a differential signal between the main push-pull signal MPP and the sub push-pull signal SPP].”

There is no disclose in the specification of structure to perform the recited function. Although the specification discloses a “phase difference detection circuit 101” that “functions as a phase difference detection means for detecting a difference in phase between the waveform of an MPP signal and the waveform of an SPP signal” (Page 20, lines 5-10), the phase difference detected by phase difference detection circuit 101 is “between the waveform of an MPP signal

and the waveform of an SPP signal” (Page 20, lines 5-10; Page 21, line 18-Page 22, line 1; and Page 30, lines 4-9) and not between the “MPP signal and the differential signal” as required by the claim.

Because there is no disclosure of structure for performing the recited function and one skilled in the art would be unable to understand what structure performs the recited function, claim 1 fails to satisfy the requirements of 35 U.S.C. 112, second paragraph.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (hereinafter AAPA) in view of Katayama (US 2002/0126588) and further in view of Yamasaki et al (hereinafter Yamasaki) (US 2002/0041545). Note that citations to AAPA refer to Applicant’s specification.

AAPA discloses an optical pickup device (Fig. 1) comprising: a light source (Fig. 1, element 201); diffraction means (Fig. 1, element 202) for diffracting a portion of light emitted from the light source to form a main beam (Figs. 2 and 8, element 30) of 0th order light and a pair of sub beams (Figs. 2 and 8, elements 32 and 33) composed of +1st order light and -1st order light which are formed on both sides of the 0th order light (Page 2, lines 15-18 and Page 3, lines 16-18); an objective lens (Fig. 1, element 205 and Page 2, line 18-Page 3, line 2) for converging the main beam and the pair of sub beams onto [an] optical disk (Fig. 1, element 206);

light receiving means (Figs. 1 and 2, element 208) for receiving the main beam and the sub beams reflected from the optical disk, and outputting electrical signals through photoelectric conversion (Fig. 2; Page 3, lines 2-5; and Page 4, lines 6-15); and a calculation section (Fig. 2, elements 304-306) for, based on the electrical signals output from the light receiving means, providing a main push-pull-signal MPP (Figs. 2-4, "MPP"), a sub push-pull signal SPP (Figs. 2-4, "SPP"), and a differential signal (Figs. 2-4, "DPP") between the main push-pull signal MPP and the sub push-pull signal SPP (Page 5); wherein an off-tracking caused by a phase shift of the differential signal, which is equal to the phase difference between the main push-pull signal MPP and the sub push-pull signal SPP, occurs in a tracking control of the main beam with respect to the optical disk (Page 8, line 7-Page 9, line 14). AAPA does not disclose a phase difference detection means for detecting a phase difference between the main push-pull signal MPP and the sub push-pull signal SPP, wherein, in accordance with an output from the phase difference detection means, an offset is applied in the tracking control of the main beam with respect to the optical disk to compensate for an off-tracking caused by a phase shift of the differential signal.

Katayama discloses optical pickup device (Fig. 17) comprising: a light source (Fig. 17, element 1); diffraction means (Fig. 17, element 3) for diffracting a portion of light emitted from the light source to form a main beam of 0th order light and a pair of sub beams composed of +1st order light and -1st order light which are formed on both sides of the 0th order light (Paragraph 0112); an objective lens (Fig. 17, element 6 and Paragraph 0112) for converging the main beam and the pair of sub beams onto [an] optical disk (Fig. 17, element 7); light receiving means (Figs. 17 and 18, element 50) for receiving the main beam and the sub beams reflected from the optical disk, and outputting electrical signals through photoelectric conversion (Paragraphs 0115-0116);

a calculation section (section which performs the calculations of Paragraph 0116) for, based on the electrical signals output from the light receiving means, providing a main push-pull-signal MPP (“(V51-V53)-(V52+V54)” of Paragraph 0116) and a sub push-pull signal SPP (“(V55+V57)-(V56+V58)” of Paragraph 0116); and phase difference detection means (implicit that a means analogous to the arithmetic circuit 46 of Figs. 15 and 16, which “calculate[s] a radial tilt signal from the difference in phase of the track signal of the sub-beam from the track signal of the main beam” (Paragraphs 0107 and 0109), calculates the “difference in phase of the track error signal of the sub-beam from the track error signal of the main beam” of Paragraph 0129, which is “usable as the radial tilt signal” (Paragraph 0129)) for detecting a phase difference between the main push-pull signal MPP and the sub push-pull signal SPP (Paragraphs 0104 and 0106), wherein, in accordance with an output from the phase difference detection means, a "highly sensitive detection of the radial tilt" is realized (Paragraphs 0104 and 0106).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the optical disk apparatus of AAPA comprise a phase difference detection means for detecting a phase difference between the main push-pull signal MPP and the sub push-pull signal SPP as suggested by Katayama, the motivation being to realize a highly sensitive detection of radial tilt in the apparatus of AAPA. AAPA in view of Katayama does not disclose that, in accordance with an output from the phase difference detection means of AAPA in view of Katayama, an offset is applied in the tracking control of the main beam with respect to the optical disk to compensate for the off-tracking of AAPA in view of Katayama caused by a phase shift of the differential signal AAPA in view of Katayama.

Yamasaki discloses, in accordance with a radial tilt signal ("St" of Figs. 2 and 3 and Paragraphs 0067-0068), applying an offset in a tracking control of a main beam with respect to an optical disk to compensate for an off-tracking caused by a phase shift of a differential signal (Figs. 1 and 13; Paragraphs 0106 and 108; see Fig. 4 and Paragraphs 0006-0007; and note that the claimed "differential signal" reads on the tracking error signal output from arithmetic circuit 11 using the push-pull method).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the apparatus of AAPA in view of Katayama to, in accordance with the radial tilt signal of AAPA in view of Katayama, applying an offset in the tracking control of the main beam with respect to the optical disk to compensate for the off-tracking of AAPA in view of Katayama caused by a phase shift of the differential signal of AAPA in view of Katayama as suggested by Yamasaki, the motivation being to compensate for the off-tracking caused by a phase shift of the differential signal of AAPA in view of Katayama. It is noted that the offset applied in the apparatus of Park in view of Katayama and further in view of Yamasaki is in accordance with the output from the phase difference detection means of Park in view of Katayama and further in view of Yamasaki because the offset is in accordance with the radial tilt signal of Park in view of Katayama and further in view of Yamasaki, which is in accordance with the output from the phase difference detection means of Park in view of Katayama and further in view of Yamasaki.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mashimo (US 2003/0048708) discloses adding a variable tracking offset to a DPP

tracking error signal (Figs. 1 and 5). Katayama (US 7,200,076) discloses determining a DPP tracking error signal, detecting a radial tilt in accordance with the zero-crossing points of the DPP signal, and compensating for the tilt by reducing the lens radial shift offset in the tracking error (Figs. 6 and 10-12). Tanaka (US 6,388,963) (Fig. 1) and Ando et al (US 2002/0060958) (Fig. 7) disclose performing phase compensation on a DPP tracking error signal. Kitamura et al (US 2003/0048704) disclose that the "DPP method uses two sub-beams in addition to a main beam from a semiconductor laser to perform servo operation, thus **requiring** a diffraction grating for generating sub-beams" (Paragraph 0006). Park (KR 2002-42200) discloses an optical pickup device (Fig. 1) comprising: a light source (Fig. 1, element 102); a light receiving means (Fig. 1, element 102 and Fig. 2); a calculation section (Fig. 1, element 103 and Fig. 5, elements 401, 402, 404, 405, 409 and 410) for providing a main push-pull-signal MPP (Fig. 5, "MPP_TE"), a sub push-pull signal SPP (Fig. 5, "SPP_TE"), and a differential signal (Fig. 5, "DPP_TE") between the main push-pull signal MPP and the sub push-pull signal SPP; and phase difference detection means (Fig. 5, elements 403, 406 and 407) for detecting a phase difference between the main push-pull signal MPP and the sub push-pull signal SPP (Abstract: "a control signal generator(407) detects the size and phase differences of the MPP_TE signal and the SPP_TE signal"). Fukumoto et al (US 6,493,296) disclose an optical pickup device (Figs. 1-3) comprising: a light source (Fig. 1, element 1); diffraction means (Fig. 1, element 4); an objective lens (Fig. 1, element 6); light receiving means (Fig. 1, element 13 and Figs. 2 and 3, elements 21, 22, 23-26, 28 and 29); and a calculation section (Fig. 3, elements 31-38) for providing a main push-pull-signal MPP, a sub push-pull signal SPP, and a differential signal between the main push-pull signal MPP and the sub push-pull signal SPP.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V. Battaglia whose telephone number is (571) 272-7568. The examiner can normally be reached on M-F, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A. Wellington can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


MICHAEL V. BATTAGLIA
PATENT EXAMINER